

Compute the 2D location of the markers and send these data back to the computer (step 720).

4. Computer selects two appropriate data set and triangulates them to obtain 3D positions of the markers of the player (step 730).
5. If the player's markers are within a certain distance range, assign a score (e.g. within 5 units, score 5, within 4 units, score 4, and so on) (step 740). Perfectly followed motion will produce a score of 25. Multiply the score by a relative weight (e.g. if this is a key posture it may be weighted more than a non key posture frame). At each instant, if the score is above certain range, assign commendation (e.g. > 24, – perfect, > 19 excellent, > 14 good, etc.). $\text{Score} / \text{frame} = \text{relative weight} * \text{sum (miniscore for each marker)}$.

IN THE CLAIMS

Please cancel claims 1-3 without prejudice.

Please add the following claims.

1. (Newly Added) A method of displaying motion guidance cues, comprising:
- receiving inputs related to a user;
 - displaying a main animated character whose motion the user is to emulate; and
 - displaying one or more ghosts of the main animated character, wherein each ghost represents a body position of the main animated character at a future time frame.

28. (Newly Added) The method of claim ¹~~4~~, wherein each of the one or more ghosts is displayed at a physical distance away from the animated main character such that the physical distance is substantially in proportion to a temporal distance of the future time frame of the ghost from a current time frame.

38. (Newly Added) The method of claim ¹~~4~~, further comprising:
capturing motion of the user;
comparing the motion of the user to the motion of the main animated character; and
providing feedback to the user based on the comparison.

47. (Newly Added) The method of claim ³~~6~~, wherein:
the step of capturing includes tracking one or more specific body points of the user;
and
the step of comparing includes comparing the one or more specific body points of the user with corresponding one or more specific body points of the main animated character.

58. (Newly Added) The method of claim ⁴~~7~~, wherein the step of capturing further includes:
determining a two-dimensional position of each of the one or more specific body points of the user from two or more perspectives; and
calculating a three-dimensional position of each of the one or more specific body points of the user based on the two-dimensional position information of the user gathered from the two or more perspectives.

68. (Newly Added) The method of claim ⁵8, wherein the specific body points of the user include articulation points of the user.

7 10. (Newly Added) The method of claim ⁴9, wherein the two-dimensional position of each articulation point of the user is determined by sensing a two-dimensional position of a corresponding marker attached to each articulation point of the user.

8 11. (Newly Added) The method of claim ⁷10, further including predicting marker positions to compensate for at least one of:

a missing marker problem wherein a marker is occluded from detection from a particular perspective; and

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a switched marker problem wherein positions of the two or more markers fail to be distinguished from sensing.

9 12. (Newly Added) The method of claim ³11, wherein the step of comparing includes at least one of:

scaling and retargeting motion data of the main animated character to the user;

compensating for an offset problem wherein the user has substantially followed the retargeted motion of the main animated character but wherein a physical position of the user is at an offset from a physical position specified by the main animated character; and

compensating for a delay problem wherein the user has substantially followed the retargeted motion of the main animated character but wherein the motion of the user is delayed from a timing specified by the main animated character.

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1013. (Newly Added) The method of claim ~~12~~, wherein scaling and retargeting the motion data is based on a height of the user.

1114. (Newly Added) A system to display motion guidance cues, comprising:
an input unit configured to receive inputs related to a user; and
a display unit configured to:
display a main animated character whose motion the user is to emulate;
display one or more ghosts of the main animated character, wherein each ghost represents a body position of the main animated character at a future time frame; and
provide feedback information to the user.

1215. (Newly Added) The system of claim ¹¹~~14~~, wherein each of the one or more ghosts is displayed at a physical distance away from the animated main character such that the physical distance is substantially in proportion to a temporal distance of the future time frame of the ghost from a current time frame.

1316. (Newly Added) The system of claim ¹¹~~14~~, further comprising:
a motion data acquisition unit configured to capture the motion of the user; and
a computing unit configured to compare the motion of the user to the motion of the main animated character.

1417. (Newly Added) The system of claim ¹³~~16~~, wherein:
the motion data acquisition unit is further configured to track positions of one or more specific body points of the user; and

the computing unit is further configured to compare the one or more specific body points of the user with corresponding one or more specific body points of the main animated character.

15 18. (Newly Added) The system of claim ¹⁴17, wherein:

the motion data acquisition unit is further configured to determine a two-dimensional position of each of the one or more specific body points of the user from two or more perspectives; and

the computing unit is further configured to calculate a three-dimensional position of each of the one or more specific body points of the user based on the two-dimensional position information of the user gathered from the two or more perspectives.

16 19. (Newly Added) The system of claim ¹⁵18, wherein the specific body points of the user include articulation points of the user and wherein the motion data acquisition unit is further configured to determine the two-dimensional position of each articulation point by sensing a two-dimensional position of a corresponding marker attached to each articulation point of the user.

17 20. (Newly Added) The system of claim ¹⁶19, wherein the motion data acquisition unit is further configured to predict the marker position to compensate for at least one of:

a missing marker problem wherein a marker is occluded from detection from a particular perspective; and

a switched marker problem wherein positions of two or more markers fail to be distinguished.

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1021. (Newly Added) The system of claim 16, wherein the computing unit is further configured to perform at least one of:

scaling and retargeting motion data of the main animated character to the user;

compensating for an offset problem wherein the user has substantially followed the retargeted motion of the main animated character, but wherein a physical position of the user is at an offset from a physical position specified by the main animated character; and

compensating for a delay problem wherein the user has substantially followed the retargeted motion of the main animated character, but wherein the motion of the user is delayed from a timing specified by the main animated character.

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1921. (Newly Added) The system of claim 21, wherein scaling and retargeting the motion data is based on a height of the user.

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23. (Newly Added) A method to display motion guidance cues, comprising:
receiving inputs related to a user;
displaying a main animated character whose motion the user is to emulate;
displaying one or more ghosts of the main animated character, wherein each ghost represents a body position of the main animated character at a future time frame;
scaling and retargeting motion data of the main animated character to the user;
capturing the motion of the user;
comparing the motion of the user to the retargeted motion of the main animated character;

compensating for an offset problem wherein the user has substantially followed the retargeted motion of the main animated character, but wherein a physical position of the user is at an offset from a physical position specified by the main animated character;

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compensating for a delay problem wherein the user has substantially followed the
retargeted motion of the main animated character, but wherein the motion of the user is
delayed from a timing specified by the main animated character; and
providing feedback to the user.

TIMELY FILED

The current reply is being filed on November 12, 2002, on the first business day following November 11, 2002, which is a federal holiday. Thus, this reply is considered to be timely filed within three months from the date of the Office Action.

ONDA ET AL NOT VALID PRIOR ART

Applicants note that the U.S. filing date of October 24, 2001, of Onda et al. post dates the current application's filing date of June 15, 2001. Therefore, Applicants submit that Onda may not be considered valid prior art.

PENDING CLAIMS

By this reply, claims 1-3 have been canceled and claims 4-23 have been added. Therefore, claims 4-23 are pending. Of these, claims 4, 14, and 23 are independent.

DRAWING CORRECTIONS

A Drawing Change Authorization Request is being filed along with this reply to amend Figures 1-8 as shown. The Figures have been amended to address the Objections to the Drawings noted in the Office Action. The Figures have also been amended to enhance consistency with the specification. No new matter is believed to have been added by the amendments.